

AVIATION AND AIRCRAFT JOURNAL

JUNE 27, 1921

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INDEX TO CONTENTS

Editorials	799	New Naval Seaplane	808
General Mitchell Retained in Air Service	800	"Who's Who in American Aeronautics"	809
Senator Borah Wants N.A.C.A. Abolished	800	Swinging the Prop in Mid-Air	811
Glenn Hammond Curtiss	803	Weather Reports for Aviators	811
Aerial Derby of the American Legion	806	An Interesting Italian Air Station	811
Advertising Tires by Airplane	806	The Altitude Effect of Air Speed Indicators	812
U. S. Civil Service Examination	806	Aeronarine Airways	812
Who Forgot an Airplane?	806	Logan Reports Increase in Business	812
An Interesting Flying Boat	806	New Rules for Aircraft Insurance	813
Ground Plane Influence on Airplane Wings	807	Airdrome Notes	814

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Vol. X

JUNE 27, 1931

No. 26

Two Important Events

TWO great happenings in Washington which have had to do with government aviation are so important that it is difficult to interpret the consequences with accuracy.

The clearing of the difficulties that Brig. General Mitchell has had with both the War and Navy Departments will result in the Air Service our most prominent flying officer. While all the difficulty seems to be over, there are still rumblings of other changes in the Army Air Service which would bring to the branch the service of one of the most distinguished A.E.F. officers. That General Pershing as Chief of Staff will wish to have some of his former officers as the heads of important branches is only natural and the Army is looking toward July with interest.

Greater Rank has started the Congressional policy of economy and consolidation by offering a resolution placing the duties of the National Advisory Committee for Aeronautics under the Executive departments which would logically handle them. This step is in line with the imperative necessity for economy in all government activities and if \$250,000 a year can be saved or even reduced it deserves Congressional consideration. The recent activities of the National Advisory Committee have been so clearly a reflection of the policy of cutting departments that its function as an advisory is gradually without effect. The overruling of the desires of the civilian members of the committee which reports to the President has created the impression that the Committee's function is properly a departmental activity and as such its work should be under more direct supervision.

The Status of Federal Air Legislation

DOUBTS are often expressed as to the constitutional right of the federal government to regulate air navigation, it being claimed that this is a prerogative of the various states. It is interesting to hear in this connection the opinion of a distinguished lawyer, S. H. Phillips, as expressed in a paper read before the Semi-Annual meeting of the Society of Automotive Engineers.

Mr. Phillips went on record saying that each State of the United States has full power to control and regulate aircraft within its limits, until Congress has exercised its constitutional power "to regulate commerce with foreign nations, and among the several States, and with the Indian tribes." (Constitution of the United States, Art. I, Sect. 8.) He proceeded to show that Congress has jurisdiction to enact legislation covering not only aircraft engaged in flying between States, but also aircraft which, although only within one State, may interfere with aircraft engaged in interstate or international business. The State and Federal courts would have concurrent jurisdiction over all questions arising out of legislation

applicable to aircraft, but a suit brought in a State court could be removed to the Federal court.

An Advanced Naval Design

ALTHOUGH no detailed information is yet at hand regarding the new twin-engine outboard airplane the Navy is testing at Norfolk naval air station, private reports state that the machine has performed admirably. This is distinctly gratifying in view of the fact that the machine represents a decided advance in the design of our naval aircraft, for it is quite a step from the steel-and-wire braced P-5's to the internally braced monoplane wing and the wing-outboard engines of the new naval airplane.

It is to be hoped that the Navy will continue its advance in aircraft design. Naval air traditions, in spite of its youth, something to be proud of—over it for nothing but the triumph of the N.C. Let the Navy continue on this road of advanced aerodynamic design by creating a folding-wing torpedo-carrying airplane which may be carried on the fast aircraft carriers. Congress has authorized. Land machines with emergency detents bugs and other aircraft have not proved a success in connection with aircraft carriers. It would seem that a folding-wing airplane may substantially solve this problem of fast sailing, which is of the greatest importance in a naval engagement.

Ground Interference

IT has long been thought that on landing the interference between the wings and the ground increased the lift to a perceptible extent and diminished the landing speed. It has also been thought that ground interference improved the go-around of a plane in such the same manner.

A recent paper by Dr. A. F. S. S. and R. K. Dear somewhat doubts these conclusions. A thorough series of tests in the wind tunnel, where the effect of the ground was simulated by ground planes parallel to the walls of the tunnel, indicated that as a wing approached the ground the lift increased for small angles of incidence and decreased at large angles of incidence. The L/D improves for small angles of incidence and decreases for large angles of incidence.

While these experiments are entirely original and have only been carried out in one tunnel, valuable conclusions may tentatively be drawn from the results obtained. It is unfair to decrease an estimate of landing speed on the score of ground interference. If anything, when the machine lands at a high angle of incidence the landing speed will be somewhat greater than the theoretical estimate. On the other hand, the length of run will be shorter than theoretically computed. On the go-around, however, if the machine is taken at a low angle of incidence the ground interference will improve the time and distance in getting up to flying speed. It is highly satisfactory to have work of this character carried out and a debatable point cleared up.

General Mitchell Retained in Air Service

Secretary of War Weeks Adjusts Differences between Chief Air Service Officers

When Maj. Gen. Charles T. Mitchell, Chief of Air Service, requested that Brig. Gen. William Mitchell be relieved as Assistant Chief, Secretary of War Weeks stated that he hoped to be able to induce the services of both officers and strengthen on the differences that had occurred between them. On June 27 Secretary Weeks gave them his instructions and General Mitchell withdrew in request. The Secretary of War has made the following statement regarding this matter:

"In making this announcement the Secretary of War stated that the recommendation made by General Mitchell in this matter was based upon reasons submitted with the better will, in the opinion of the Secretary of War, justified his action. The Secretary, however, believing that in the interests of the Air Service and of the Government itself such action would be undesirable and unworkable at this time, has been able to secure a satisfactory adjustment of the difficulties involved."

"General Mitchell was selected to be the head of the Air Service because he was a man of fine flying record in France,

a man of good judgment and level head, and a very capable executive. He is not only the nominal head, but he is the actual head of the Air Service and so much is responsible for all policies in that department."

"General Mitchell was selected the day he arrived as General Mitchell because of his fine flying record in France and because he was generally a flier. His personal knowledge of the flying game was then put at the disposal of General Mitchell as the training of the personnel of the Army Air Service."

"It is the desire of the Secretary and he is anxious to accomplish that desire, to utilize the excellent qualities of both men in the future effort, each in his special sphere, but he holds General Mitchell responsible for the entire conduct of the Air Service as its legal and actual head."

"Finally, it is now clearly understood by both General Mitchell and Mitchell that the action of the latter, was not the reason for General Mitchell's recommendation. In the belief of General Mitchell, will not be repeated."

Senator Borah Wants N.A.C.A. Abolished

Introduces Resolution Transferring N.A.C.A. Duties to Existing Government Departments

Senator Borah of Idaho introduced on June 17 a joint resolution abolishing the National Advisory Committee for Aeronautics. The text of the resolution follows:

Joint Resolution

ABOLISHING THE ORGANIZATION KNOWN AS THE NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS, AND TRANSFERRING ITS PROPERTY AND DUTIES TO EXISTING GOVERNMENTAL AGENCIES.

Whereas an act setting appropriations for the Naval Service for the fiscal year ending June 30, 1916, and for other purposes of March 3, 1916, known as H. R. 20778, and further known as Public 271, created a body known as "Advisory Committee for Aeronautics"; and

Whereas, at this time, the necessity for economy demands a consolidation, where possible, of governmental agencies whose activities are overlapping, and whose duties result in duplication;

Now, therefore be it

RESOLVED BY THE SENATE AND HOUSE OF REPRESENTATIVES OF THE UNITED STATES OF AMERICA IN CONGRESS ASSEMBLED,

That the body known as the National Advisory Committee for Aeronautics is hereby abolished as such.

SEC. 2. That the technical duties that have heretofore been carried on by the body, or that have heretofore by law been charged to the body, be, and they are hereby, transferred to the Department of Commerce, to be carried out by the Bureau of Standards.

SEC. 3. That the technical equipment now in the possession of the National Advisory Committee for Aeronautics be, and it is hereby, transferred to the Department of Commerce, to be available for the work of the Bureau of Standards.

SEC. 4. That the buildings and real estate now belonging to the National Advisory Committee for Aeronautics at present on Military or Naval Reservations be, and they are

hereby, transferred to the War Department or Navy Department at the sole and sole will of the President.

SEC. 5. That each duties of the National Advisory Committee for Aeronautics as relate to its advisory capacity in the subject of Aeronautics be, and they are hereby, transferred to the War General, or created by the National Defense Act of June 15, 1916, as amended, and as amended on June 3, 1918, to be, and including the Act of June 4, 1916.

Initial Test of New Army Aircraft

On May 22, 1921, two new airplanes built for the Air Service were given their initial flights at Dayton Field, Dayton, Ohio. The Loening TW-2, single motor pursuit airplane on firm by Lt. J. A. McCormick, who reported that the airplane handled very well, was quite pleasant to fly and possessed excellent visibility. He expressed no difficulties on its flight, which lasted about half an hour, during which time he tried very thoroughly the various flying qualities of the machine. The airplane is equipped with a 200 hp. Wright engine with a four blade propeller, and carries full landing gear, and the single motor pursuit airplane developed during the test, being a monoplane with the wing attached to the upper fuselage and braced by diagonal struts to its lower fuselage of the fuselage.

The O. Ellis TA-1 training airplane was flown by Lt. George B. Patterson who reported that the airplane handled perfectly and served very well and responsive to the controls. It appears to land very slowly and stops after an unusually short run. The TA-2 is a two-motor training airplane equipped with the 120 hp. Wright A-5B aircraft radial engine. It is the first military airplane which has been flown with the U. S. 27 wing curve, which has given satisfactory results in the wind tunnel tests. With this wing section only one half of a mile as each one is required for turning with greatly simplified turning and maintenance in the field. With the exception of the great management the general design of the airplane follows orthodox practice.

Civilian Aviation Petitions President

Leaders of Civilian Aviation Ask for Hearing on Air Policy

Over fifty aviation experts representing the leading aeronautical organizations in this country have requested President Harding to permit them to give to the Secretary of Commerce

their views on government air policy as it affects civilian aviation. The first that went to the White House made its follow.

A BRIEF

For the Advancement of Civilian Aviation in the United States

The undersigned, while acknowledging the efforts which have been made by governmental departments to create an aeronautical policy, nevertheless, deem that the President and Congress has removed from civilian aviation outside non-governmental agencies what is regarded as most necessary for its immediate and full future perfection.

The undersigned request the President to make available for general consideration the best evidence of civilian aviation exists not in the respect of the government. To do this it is suggested that the President should request the Secretary of Commerce to appoint an Aviation Consulting Board as an Aviation Commission consisting of two civilian representatives from each of the following organizations:

- (1) Aero Club of America, representing aviation, design and construction.
- (2) Manufacturers Aircraft Association, representing insurance.
- (3) National Aircraft Union, representing technical.
- (4) Society of Automotive Engineers, representing technical.
- (5) National Advisory Committee for Aeronautics, representing technical.

We suggest that this group be requested to present for the consideration of the President, through the Secretary of Commerce, a report dealing with the subject of civilian and commercial aviation, with particular reference to the following matters:

- (1) The general policy which the government is to follow in developing civilian aviation.
- (2) Suggestions for needed law.
- (3) Air routes and terminals.
- (4) Any other aspects of aviation which the committee believe should be referred to the President for his consideration in this subject is now before Congress, we urge—if the above matters with the President's approval—that the committee be authorized to report at the earliest possible moment.

The Signatories

The above has been approved and signed by the following:—
 Glenn H. Curtiss.
 Gordon Gray, L. I. N. Y.
 Glenn H. Curtiss.
 President, Glenn L. Martin Co., Cleveland, Ohio.
 Frank H. Bennett.
 Curtiss Aeroplane and Motor Corp., Garden City, L. I.
 S. D. S. D.
 Raymond D. Walcott.
 Detroit, Mich.
 F. S. Brinkley.
 Wright Aeronautical Corp., Paterson, N. J.
 Nelson F. Gifford.
 Glendale Aircraft Corp., E. Greenwich, N. J.
 Donald W. Douglas.
 Douglas Aircraft Co., Los Angeles, Calif.
 Edgar H. Gutz.
 Boeing Airplane Co., Seattle, Wash.
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 Dayton Wright Co., Dayton, Ohio.
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 Underwriters Laboratories, Inc., Ry.
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 National Aircraft Underwriters Association, Ry.
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 Manager, Aircraft Department, The Home Insurance Co., New York.
 Harvey C. Seiler.
 Manager, Aviation Department, National Liberty Insurance Co., New York.
 Arthur Cunniff, Buffalo, N. Y.
 Edmund Ely, Hartford, Conn.
 Paul G. Zimmerman.
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 Loening Aeronautical Corp., New York.
 Chas. L. Lawrence.
 Lawrence Aero Engine Corp., New York.
 Alexander Klemm.
 Consulting Aeronautical Engineer, New York.
 Chas. F. Willard.
 Aero Distributing Co., New York.
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 United Engineering Aircraft Co., New York.
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 V. J. Bonnell.
 Airline Engineering Corp., Andover, L. I. N. Y.
 Chas. Cox.
 Airline Engineering Corp., Andover, L. I. N. Y.
 H. G. Smith.
 United Aircraft, New York.
 Elmer Kegan.
 Horace Kegan Aeronautics, New York.
 Ralph Upson.
 Aeronautics Engineer, New York.
 E. D. Dillard.
 Huff-Bell Co., Ogdenburg, N. Y.
 Albert F. Loening.
 Loening Aeronautical Corp., New York.

Ladies OfVow.

Editor, *AVIATION AND AERONAUTICS JOURNAL*, New York.
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 Governor, Aviation, Aero Club of America, New York.
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 Thomas-Morse Aircraft Corp., Illinois, N. Y.
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 A. J. Elias,
 President, C. Elias and Bros., Inc., Buffalo, N. Y.
 Geo. B. DeMott,
 President, Mercury Aviation Co., Los Angeles, Calif.
 John H. Fisher,
 Vice President, Aero Club of Southern California, Los Angeles, Calif.
 C. F. Kettering,
 Dayton Wright Co., Dayton, Ohio.
 Virginia E. Clark,
 Dayton Wright Co., Dayton, Ohio.
 H. F. Edwards,
 Detroit, Mich.
 Henry B. Jap,
 Detroit, Mich.

Aviation in the Far East

The following information on aviation developments in the Far East is taken from *The Far Eastern Review*:

Peking-Shanghai Aerial Service. In aerial service between Peking and Shanghai was to be inaugurated June 1 next. The passage time will be 2200 for one single ticket and the postage for every letter will be 15 cents.

Aviation in Canton-Tientsin. The aviation department is going to erect landing grounds and airbases at Tientsin, the provincial capital of Shanghai. Lands to the extent of 5000 acres have been purchased by the department recently sent to investigate the conditions of Tientsin. It is anticipated that the aerial service between Peking and Tientsin will soon come into operation. Offices for the aviation service will also have to be built in Tientsin.

Japan Gets Airplane.—Vickers, Limited, at Tientsin in Fuzhou have completed a number of airplanes of the latest design for the Japanese government.

Los Angeles to Buy Airplane in Korea.—In answer to the request from Wang-Ho Yu Yangping for the supply of airplanes, Peking has indicated an intent to buy them from the Portuguese merchants in Mian. But the machines will be taken over by Peking after the expedition against Kiangtung has been completed.

Conclusion of Reptiles Loan.—*The Shun Fung Ship* has in requisition for the report that the proposed airplane loan has concluded. The agreement between the Chinese and the Hong Kong (Vanguard Co.) and the Chinese Government, the agreement having been signed on the 15th instant, and a sum of \$500,000 having been handed over to the Chinese side. The amount of the loan is \$500,000 for 150 airplanes and engines of constructing airplanes, with an additional sum of \$200,000, totaling \$700,000. Annual interest is 5 per cent, the loan to be repaid in five years.

Ryugasaki Factory to Be Enriched at Nagoya.—Mr. Walter representing Messrs. Armstrong & Co. of England is in Tokyo with six machines specially selected by the British government, with a view to reviving the largest aircraft industry at Nagoya. Meanwhile and other prominent Japanese firms are interested in the project. It is understood that the factory will turn out machines to be used for aerial mail service between Shanghai and Tokyo.

Aviation Station in Japan.—The station of Japan, Kurehara and Hamamatsu have been selected for the purpose of an aviation station in Japan. The station

are being invited for the construction of the hangar.

Aeronautical Society Formed in Shanghai.—Shanghai club is forming an aeronautical society with a capable technical board with the object of encouraging the development of aviation and (2) to undertake and organize flying competitions, sporting events and trials in Shanghai. The society will be affiliated to the International Aeronautical Association.

Locating Seals by Aircraft

Some interesting experiments in locating seals by means of aircraft have recently been made in Newfoundland, according to a letter received by the Aero Club of America from Captain J. Hamilton, Government House, St. John's, N. F. The letter reads as follows:

"In continuation of my letter of the 15th instant and accompanying correspondence, I am now in a position to give you a certain amount of information concerning the recent operations of locating seals in their waters by means of airplanes which I trust will be of interest.

"Early in the year of the current century attention was attracted to the seal, which was then taken up by Major F. S. Oates. Renewed investigations greatly interested progress with its result that the great bulk of materials and equipment did not arrive at the seat of operations until the 1st of March.

"The base was established at St. John's on the north east coast and the first reconnaissance flight was carried out on March 25. By this time the ice had broken and the ship began locating the seals which had been driven to some 500 hundred and fifty miles east of St. John's.

"Weather conditions during the winter have been unusually severe. There were a number of snow blizzards and a great deal of snow on the ice which was used as an airfield. Climate conditions caused several delays, but the trials were eventually overcome and considerable valuable experience and data gained.

"The longest patrol was made on March 25 to a point of 50 deg. 30 min. N., 60 deg. 45 min. W., or a total distance of about 500 miles. This patrol, which was not short of the positions of the sealing stations, was being definitely made, was not sufficient to take the machine to the location of the seals. The range of vision was extremely large and the observer was of the opinion that here will be a difficulty in detecting seals if they are present. In addition to the pilot (Major Oates), and the observer (Captain Hamilton), a second pilot (Captain Plummer) and wireless operator (Mr. Heath) were carried.

"During another trip from St. John's to Fogo and return extremely severe conditions were encountered, and a 30 mile on base leg. The airplane made the outward journey of 65 miles in 22 min., but took an hour and three quarters to return. Several shorter trips (totaling in all about 9 flights) were made along the coast and inland before the weather conditions prevented further flying on April 13.

"The interest of starting operations prevented the actual starting of the project this year, but the progress made and the information gained in the past season is sufficient to indicate great possibilities for success in the future should any further attempt be made. During the operations tested the machine was quite strong, the coast and inland before the weather conditions prevented further flying on April 13.

"The machines were the W. C. Oates, Major and minor Lancia and Stikley P. O. O. O."

Flying for Business Reasons

A recent visit of the S. A. E. Journal editor, C. F. Kettering, vice-president of the General Motors Corp., with "I made only two railroad trips last year, I flew more than 15,000 miles. I was not carrying, but was at one place and wanted to go somewhere else, and traveled in an airplane."

The aircraft, which is here, said J. C. Kettering, a two-faceted industry. The economic side of it is so fundamental and the commercial side is so tremendous that commercial organizations should devote to the fact that to reap commercial success they must contribute something to the fundamental research problem."

Glenn Hammond Curtiss

A Biography

Glenn Hammond Curtiss was born in Hammondsport, New York, May 23, 1878. He was the son of Frank H. Curtiss and Mrs. Anna Curtiss. The paternal grandfather was a Methodist minister, who for many years preached in the little village in the picturesque little village at the end of Lake Erie.

Almost from the time of his birth, Curtiss manifested a strong interest in mechanics. While yet a child, he was well versed in an important number of odd contrivances, from a clock to a watch, and he was very much interested in the construction of a clock.

When at the death of his father, in his early childhood, he was moved to Rockport, where he was educated in an appropriate manner. He attended the Hamilton School, where he acquired a knowledge of working with wood and small pieces of wood which later stood him in good stead in the manufacture of motors and airplanes.

Always on the lookout for new ways to make money, he was quick to carry on his experiments, he was quick to see the possibilities in the new machine in the Western Union message, and it is believed that he was the first to use a motor state, and later a bicycle for locomotion purposes.

He possessed a divergent mind, he was quick to see the possibilities in the new machine in the Western Union message, and it is believed that he was the first to use a motor state, and later a bicycle for locomotion purposes.

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W. H. Taylor, J. A. D. McCarty and Curtiss. "For the purpose of carrying on experiments relating to aerial locomotion, with the object of securing a successful motor-driven airplane."

After numerous late and glacial experiments, Curtiss, directing, as motor expert and director of experiments of the Association, the O. H. Curtiss Manufacturing Company built the Red Wing, the White Wing, the Blue Wing and the Silver Dart, designed by the members of the Association, and Curtiss designed and built the motors for them. The first eight cylinders, four type air cooled and water cooled motors were

built in the new shop and factory. The work of the Association was successful from the start, and Curtiss, having established a reputation of successful flight, the Association developed the Airplane System of Control and Standard, and the progress in improvement and skill in flying by Curtiss and others was so rapid that in the year 1900, the first of the Association was the first of the Association.

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Glenn H. Curtiss

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Returning to America, he was met by a distinguished delegation from the Aero Club of America, which presented him with a gold medal.

Continuing his work in the development of aircraft engines, Curtiss had re-designed his engines, incorporating the water-cooled principle, as distinguished from the air-cooled type hitherto used.

Continuing his work in the development of aircraft engines, Curtiss had re-designed his engines, incorporating the water-cooled principle, as distinguished from the air-cooled type hitherto used.

There was graduate demand for flying instruction, and Carlson learned the Carlson Exhibition Company, and for several years gave personal instruction, teaching many prominent army and navy and exhibition pilots, prominent among whom were Com. J. H. Tamm, U. S. N., the commander of the 302 Flight Expedition, Lieut. T. G. Elyson, U. S. N., Captain P. W. Beck, U. S. A., C. C. Widner, G. Lansing



Oliver H. Curren after He Has Made a Mile in 28 2/3
Sec. at Ocala Race, Fla.

Calvin, Bertha, Byron, Charles E. Hamilton, J. A. D. McCurdy, W. E. Roberts, Com. Patrick Reffinger, U. S. N., Com. Richardson, U. S. N., Lawrence Lean, Crawford Dixon, Charles F. Willard, Charles F. Walsh, Isaac Bencher, William Hoff, W. D. Atwater and many other well known faces.

At the beginning of the war these men and their students, many of whom were instructors in Catholic Schools, formed the nucleus around which the United States Government built the American Air Service.

On May 20, 1931, Carver made his spectacular flight from Albany to New York, down the Hudson River, winning the New York World prize of \$20,000. He covered this distance, 150 miles, in 2 hours and 51 minutes, making two stops, one at Poughkeepsie and another at Newburgh.

Ever since 1898, Curtiss has been at work upon a water machine, first at Hiramsholmport and later at San Diego, labors which finally resulted in the invention of the original hydro-aeroplane, and the next year of the invention of the Hydroplane. For these two achievements, Curtiss received the *Aero Club of America* trophies in 1912 and 1913.

On February 23, 1991, he accomplished the first flight from land to water and from water to land, leaving the shore at San Diego, flying out over the waters of the bay, alighting and arriving again and making a successful landing on the beach in a smooth, graceful, unhesitating fashion.

During 1911 and 1912, Collins and his students busied themselves with the design and construction of aircraft, concentrating the military value by conducting both day and night flights, and establishing world's records for airplanes, hydro-airplanes and flying boats. In December, 1911, the Air Club of America awarded Mr. Collins the Robert J. Collier Trophy, for the most signal advance in aviation during a year, namely the night-float hydro-airplane. In December, 1912, the Aero Club of France awarded him the same trophy for his motor and motor parts, which were installed in airplanes.

In August 1912, Curtiss made his second try to Kearsley and as a result secured a number of contracts with foreign governments. In February, 1913, Mr. Curtiss was contacted by Rodman Wanamaker to construct a three-bladed propeller for a patrol plane for the United States Navy. This work was partially completed at Hammersmith at the time the war began, in August, 1914. The transatlantic flight was abandoned, but the American ordered for war purposes was sold to the British government, and formed the basis for a quantity of work being done in England, built by the Curtiss Company, and is England for the Royal Navy.

It was about this time that the Northeastern Institute through its Secretary, Dr. Walcott, and the well known national engineer Charles M. Manly, believing that Hans P. Langley, the former secretary of the Institute and an ardent and persistent investigator of aerial theories, had in a Langley machine designed and built an airplane capable of successful flight, asked Mr. Curtiss to take the machine



By Ruth Christie Hainsworth. The "Fiction" lamp has

There's one more, equip it with pistons and fly it. The club, and not only demonstrated that the original machine with its original motor was capable of sustained flight, I also proved that even with additional piston weight 300 pounds the machine was thoroughly practicable and capable of doing well that which its inventor had said it would.

On May 10, 1912, for the successful development of a hydroplane and flying boat, the Langley Model, present at the Smithsonian Institute, Washington, D. C., was sent to Glenn H. Curtiss. In 1909, the Curtiss Aeroplane & Motor Corporation, with a capitalization of \$90,000,000, which evidently included some plants and fire flying stations, was organized. Even before the beginning of the great war several of the foreign governments had asked for designs of military planes, hydroplanes and flying boats, and the plants were soon occupied in building war types, of which the foreign countries were almost entirely for England. With the entrance of the United States, still larger orders were added.

[illegible]

June 27, 1967

mentary and M. L. Carson, whose mother died, moved in 1940, was producing the Canadian line of glass.

At the end of the war, it was decided to develop a new line of birds for the NC transportation service, and K was "born" from this plant that a number of the commercial types were possible, including the Curlew, the Curlew Seagull, the Curlew Eagle, the new two passenger plane, the Wing and the Hornet, the former of which holds the world's altitude record. A number of other special designs for commercial and mail service are now in the process of development. Mr. Curtis is still actively engaged in the drawing, designing and development of advanced

Notes and Models Won by Class B. Case

Date	Prize	Event	Owner
Mar. 25, 1925	Highland Leading Club and Best Male	Metropolitan Road Race	New York State Club
Apr. 20, 1925	Gold Medal	High Jumping Club	
May 10, 1925	Championship Medal	244-4 Champion Steeple	
June 3, 1925	Highest Award for Americanism	St. Louis Exposition	
Summer of 1925	Highest Award Custom Motorboat	Recreation Council	
1925	Highest Award Custom Motorboat	The Lewis & Clark Exposition, Portland, Oregon	
1927	Diagonal Medal and Highest Award	F. A. M. National Exhibition, San Francisco, California	
July 4, 1928	Scientific American Trophy	Longest Flight Airplane in Race	Scientific American
July 15, 1929	Scientific American Trophy	Award by I. N. T. for a scientific achievement	Scientific American
1929	Corkland Paid Riding Prize	The Best of four American riders	Corkland, American Club of America
July 20, 1930	The Gordon, San Francisco, \$25,000 Cash	World's Speed Contest	James Gordon, Houston
Sept. 1930	The Gordon of Pine Mountain, Pine Awarded 1,000	Brands, Italy Fastest in race of 20 kilometers	
Sept. 1930	Gold Medal	In recognition of achievement	Academy of America
Jan. 17, 1931	Los Angeles Best Club prize \$1000	Speed, Resistance and Endurance Race	Los Angeles Club of America
Mar. 25, 1931	W. E. Kelly Cup	The World's Fastest Race, San Antonio, Texas	
Mar. 25, 1931	H. T. World, Yale Club \$50,000	New York to Alameda, California	New York World Club
July 4, 1932	Atlantic City National Club \$50,000 Cash Prize	Best of four American riders	Atlantic City National Club
1932	The Robert J. Co. Best Trophy	For the most significant achievement in the history of the world	Robert J. Co.
July 1932	Amer. Club of American Trophy	Development of the American Club of America	Amer. Club of America
Aug. 1932	Amer. Club of American Trophy	Development of the American Club of America	Amer. Club of America
May 9, 1933	The Langley Medal	For outstanding achievement in the history of the world	Langley Medal

Private Issues in Glass II: Corrosion

1. Flying Machine—The Allison System of Control, the shoulder yoke and wheel control, steering wheel, landing gear (Pulsat to Bell, Baldwin, McCarty, Selbridge & Carlson of Los Angeles Experimental Aircraft Co.).
2. Means of landing flying machine.
3. Landing Mechanism for Flying Machine and the like—A dual control mechanism.
4. Flying Machine—Control mechanism shiftable from one position to another.
5. Flying Machine—Adjustable Wings.
6. Flying Boat—The original flying boat.
7. Elevator that air flying machine—Thrust ductless system.
8. Hydroplane—Thrust distributing system, hydroplane system, automatic boat, built in wings.
9. Hydroplane—The original hydroplane.
10. Flying machine—Differentially actuating lateral controls.
11. Exhaust Hunter for Air boats.
12. Hull for flying boats—Lateral planing bottom extension.
13. Landing gear for aircraft—Tandem wheels, equalizer type, shock absorbing system.
14. Multiple control system for Frane Moors—Control system for Multiple Motor Units.
15. Folding Wing.
16. Boat Hull—For Flying Boats.
17. Flying Boat Hull—General Construction.
18. Multiple Step Flying Boat.
19. Propeller.
20. Method and System for Operating Engines of Aircraft.
21. Hydro Aero Machine—Streamlined Pontoon.
22. Flying Machine—Multicontrol, Fighting Type.
23. Flying Boat—General Construction.
24. Flying Boat—Flying Boat Term.
25. Balancing System for Aircraft—A system of lateral and directional control.
26. Hydroplane Boat.
27. Aircraft—Fastness and Landing Gear Construction.
28. Flying Boat—Multimotored, Docking type, Two Sides Intervening Motor Supporting Systems, Built in Wing Panels, Thrust Distributing System.
29. Boat Type Wing Pontoon.
30. Draft System for Flying Boats.
31. Flying Boat Hull—Improved Planing Surface Funnels.
32. Landing Gear for Aircraft—Tandem Wheel Type for Landing conditions.
33. Flying Boat—The original "America" type of flying boat.
34. Hydroplane Pontoon.
35. Convertible Landing Gear—The original land and water operating machine. A hydroplane with extendable air landing gear, which wheel gear.
36. Flying Boat Cranes—A crane type craning motor boat with wings.
37. Valve operating system—For four-valve in the boat.
38. Folding Wing Flying Boat—Wing built in hull of boat on landing and liftoff.
39. Flying Boat—Keepspace Construction.
40. Twin Engines—A hydroplane with automatic motor control.
41. Asymmetric An automobile with wings.
42. Hull for Flying Boats—Sea Going Type.
43. Flying Boat—Sea going type with shiftable wing and hull in hull, Archetype power for winging.
44. Afloat Construction—For flying boat, Keepspace in wing arrangements.
45. Hydrocraft—A self landing hydroplane.
46. Airplane Landing Gear—For light monoplanes.
47. Twin Float Hydroplane.
48. Airplane Wing Trans—For gasplanes and other multi engines.
49. Landing gear for aircraft—An land gear supported with hydro surface to permit landing on water.

80. **Grounding Hydroplanes**—Intercepted power plants in both tail and wings.
81. **Remountable Water Pumps**—Triplets Speed Boat, a triplane with inline wings.
82. **Speed Boost Airplane**.
83. **Folding Wing Airplane**.
84. **Reconnaissance Airplane**—A biplane without intervening wing.
85. **Fuel Supply System**.
86. **Interlocking System for Traveling Motors**—The Original Dual Pump Continuous Draining System.
87. **Flying Boat Hull**—Constructional Features Greater Strength Types, Redwood Side Plating System.
88. **Flying Boat Construction**—Constructional Features Multispanned Seagull Type.
89. **Airplane Wing Structure Type**.
90. **Microaerobics**—A Flying boat having supplemental plating section of the Hydroplane type.
91. **Turbo Flying Boat**—A multispanned super-flying boat having triplane wing and a triple boat water base.
92. **Airplane Tying**—A universal type wing post and fuselage steel mesh.
93. **Hydro Aero Machine**—"NC" Tonnageless Type Flying Boat, Engineless Construction.
94. **Airplane Wing Construction**.
95. **Airplane Construction**.
96. **Airplane Construction**.
97. **Triplane**—Multispanned Seagull Type.

Aerial Derby of the American Legion

The Flying Club of Kansas City has undertaken to carry out the aviation program of the American Legion National Convention to be held there from Oct. 31 to Nov. 2.

A large appropriation has been made for the project, and manufacturers, as well as individual and group owners of aircraft, will be asked to enter machines in the Legion Derby and numerous trophy contests. In addition to this, Air Force maneuvers are being called to demonstrate formation flying, stunting, dropping by parachute, and night flying.

The opening of the Convention will inaugurate the operation of a military landing field equipped to supply the needs of aircraft participation in the program. The grounds will be the first big city of cross-country fliers, and they are invited to make the club their headquarters while in Kansas City.

Advertising Times by Airplane

Great ingenuity in advertising is being shown by the Chas. A. Parker Co. of Cincinnati which uses an airplane for the purpose of calling attention to the merits of Lee Tires. The machine, which has been in operation since April is painted in such a manner as to leave no doubt of its identity to the minds of observers.

The plan followed by the pilot and salesman is to approach a town at a low altitude to attract attention, then drop pamphlets extolling the virtues of Lee Tires. A landing is then made as near as possible to the town, and when a sufficient crowd has gathered business is transacted. If the salesman finds it necessary to go into the town he is assisted by the pilot who flies by carrying passengers. Thus the advertising continues while business is transacted.

Nothing is so easy when publicity is secured in this manner and the company reports that advertising by airplane pays.

U. S. Civil Service Examination

The U. S. Civil Service Commission announces an open competitive examination for the position of Airplane Pilot in the Air Mail Service at a base salary of \$2,000 a year with additional pay for mileage basis; and for the position of Flight Test Observer for a vacancy in the Engineering Division, Air Service at Large, at from \$2,000 to \$3,000 a year.

Applications will be received until July 5, 1923. Further information may be had from the U. S. Civil Service Commission, Washington, D. C.

Who Forgot an Airplane?

That anyone should actually be capable of forgetting an airplane may seem somewhat strange, but there has been one, as may be seen from the story which follows—and which is satirical.

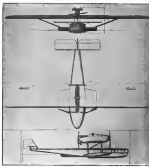
About a year ago a black JN flew into the airframe of the Dayton-Wright Co., at Dayton, Ohio. It carried two men but required whether they might leave their machine on the field for a day or so, and stated that they would return for it as



A MISTAKE—"FORGOT"—THE AIRPLANE REMOVED FROM that length of time. That was the last the airplane saw of the two men. Imperious as to who would be the owner of the forgotten machine, the Dayton-Wright Co. was not in a hurry to get it back. As the machine takes up valuable space, the Dayton-Wright Co. would like to have from its owner, who should claim it without delay, the JN will be disposed of for the payment of storage charges.

The accompanying illustration of the mysterious "JN" seems to show that it is of rather ancient vintage, belonging apparently to the JN-4B type. The following inscription appears on the sides of the fuselage: Marshall-Palmer Air Service, French Palace, Paris.

An Interesting Flying Boat



THREE-DIMENSIONAL VIEWS OF THE DORNIER O.E.II FLYING BOAT, DISCOVERED IN THE JUNE OF JUNE 5, 1923

Ground-Plane Influence on Airplane Wings*

By A. F. Zahm, Ph.D., and R. M. Bear, B.S.

Bureau of Construction and Repair, U. S. N.

Preface—As the aer action on the wings of an airplane may change materially, for a given speed and plane, when the earth leaves or approaches the earth's surface, the nature of this change has been deemed worth investigating with a model in the wind tunnel. A test made on a single British C.A.F.6 aircraft at 40 miles an hour in the 6 ft. x 4 ft. tunnel, at the Washington Navy Yard, is described in this article. The model was made of brass and measured 3 x 18 in.; it had the form of profile shown in Fig. 5.

Method of Measurement—Fig. 1 shows the apparatus for the test assembled in the 6 ft. x 4 ft. tunnel. The model is held at right angles to the stream by the tapering spindle of the



Model and spindle shown in a test tunnel.

FIG. 1.

cross-axis wheel balance, and held at one side by a "ground plane" parallel to the walls of the tunnel and held at its top and bottom edges in two grooved blocks as shown. The 1/2 in. made of 1/2 in. stainless steel is a short two foot wide plate stresser and clamped to a thin strip on the side inside from the model. The guide boards are grooved for a distance of two feet, then chamfered up stresser to edge. Back with the floor and the ceiling. The grooves are 1/2 in. wide and spaced 1/2 in. between centers; and each indicates the distance from the nearest face of the plate to the chord of the model of zero pitch.

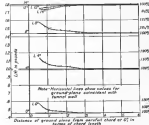
For each setting of the ground-plane, the lift, drag, and pitching moment was measured in the usual way at 40 m.p.h. and 4 deg., 8 deg., 12 deg., 16 deg., and 24 deg. pitch. In successive settings the ground-plane was moved laterally, by increasing steps, up to 18 in. then removed from the tunnel or set over against the wall, the further displacement being

shorter the experiment of removing the plane entirely, when otherwise was made for the change of cross-section of the tunnel due to such removal.

Values of Lift and Drag—The measurements of lift and drag are not included but are plotted to scale made in Figs. 2, 3, 4.

For all angles of incidence, as should be expected, the graphs of lift, drag, and lift-drag curve rise and fall rapidly as the ground-plane shifts from about half a chord length upstream to greater distances from the wing. They also tend to approach asymptotically a horizontal line which marks, for the represented quantity, the value obtained with the ground-plane infinitely distant.

The curves are roughly exponential and may be expressed in the form $y = a + b e^{-cx}$, where a is the asymptotic value, $a + b$ the initial value, x the ground-plane distance, c the coefficient of decay of the ground-plane influence. The dotted



Lift and drag curves shown in terms of chord length.

FIG. 2.

lines in Fig. 4 are true exponential curves and outside with the actual plotted data is within the degree of precision of the measurements. The measured resistance was derived from straight-line graphs of the data plotted to semi-logarithmic paper.

As the pitch increases from the smallest value 6 deg. up to near the limits incidence, the lift falls, and the drag rises with increasing step between the aerfoil and the ground-plane; also for these conditions the curves are further separated from their asymptotic velocity and reach practical contact with them further from the origin. The asymptotes in all cases were inversely found from a single measurement, and in some instances seem to be less trustworthy than the curves approach them.

As the pitch approaches the bubble angle the ground-plane effect disappears roughly to 0, then becomes increasingly negative as far as the test decision.

The numbers on the right-hand side of Fig. 4, at the top, indicate that the efficiency of a monoplane at a steady climb, using the earth's surface may be increased 20 or 30 per cent at

* From The Journal of the Franklin Institute.



FRONT AND SIDE VIEWS OF A WIND TUNNEL MODEL OF THE NEW TWIN-ENGINE BIPLANE G.S. ALL-METAL MONOPLANE, DESIGNED BY OUR BUREAU OF JUNE 6, 1931

The Altitude Effect on Air Speed Indicators N.A.C.A. Report No. 118

The object of this paper is to present the results of a theoretical and experimental study of the effect on the performance of air speed indicators, of the different atmospheric conditions experienced at various altitudes. The matter has ordinarily been handled in a very simple way by following the \sqrt{P} law and therefore converting the observed reading of the air speed indicator by assuming the differential pressure developed to be directly proportional to the density and independent of any other physical property of the air.

Thermodynamic formulas are available indicating the probable performance of Pitot tubes at high speeds where compressibility has to be considered, but all effects which have thus far been made to arrive at a sufficiently accurate formula for the Venturi tube by purely deductive reasoning have proved unsatisfactory, on account of the difficulty of treating viscosity and turbulence. An adequate method of analysis for such problems has, however, been found in dynamical reasoning, but by this means the maximum number of experimental data needed for providing an absolutely complete inductive rather than deductive solution can be determined. In this way in the present paper the general form of the use of the instrument, its velocity through the air, and the density, viscosity, and elasticity of the medium has been derived.

The experiments reported all relate to Venturi tubes. They indicate water charged experiments to determine the degree of dynamical similarity attainable between air and water and to discover whether compressibility has to be taken into account; observations in a wind stream at reduced pressure, i. e., a vacuum wind tunnel, to determine the effect of density and viscosity; airplane observations as a practical check on the laboratory results; also ordinary wind tunnel tests.

At the conclusion of the paper a chart is given containing the most probable results available to date for the relative performance characteristics of the well-known types of air speed models both American and foreign, involving Venturi tube construction. This chart provides the necessary experimental basis for interpreting altitude corrections.

This investigation is primarily of importance in connection

with low speed or high altitude flight, for the altitude correction under the conditions of high-speed flight near sea level is sufficiently well given for most instruments by the simple \sqrt{P} law.

A copy of Report No. 118 may be obtained upon request from the National Advisory Committee for Aeronautics, Washington, D. C.

Aeromarine Airways, Inc.

Aeromarine Airways, Inc., has established a very successful route in its Southern district, where it serves the U. S. mails and several thousand passengers in perfect safety and comfort for a distance of 375,000 passenger miles between Key West and Havana, also Miami, Palm Beach and the Bahamas Islands. Aeromarine Airways, Inc., is now ready to carry out its operations in the Northern district, along Long Island Sound, the New England shore waters and the New York Lake routes, in connection with scheduled runs of New York to Boston, New York to Newport, New York to New London, New York to New Haven, Albany and Atlantic City, and the popular aerial sight-seeing tour of Manhattan Island.

The fleet of the company consists of six 18 passenger flying cranes, and a number of 6-passenger open cockpit and enclosed cabin flying boats. No effort has been spared to make these ships the most comfortable and the most attractive of any in commercial use today.

Logan Reports Increasing Business

Rapid deliveries and reasonable prices, coupled with a large and varied stock of goods to meet the rapid expansion of the business of Philip S. Logan, the Cleveland jobber in airplanes, flying boats, motor and motor.

Mr. Logan reports that his shipments are going to all parts of the United States and express great optimism in regard to the increase of aeronautical activities this season. Mr. Logan is a most ardent aviator. He believes that the airplane for commercial landing fields and for maintenance flying of ships—and only those in good flying condition—are the stepping stone to aeronautical progress.

Naval Aircraft Sink Submarine U-117

The first of a series of tests conducted by Army and Navy air forces to determine the effect of aerial bombs on naval vessels, which took place on June 21 off the Virginia Capes, resulted in the quick destruction of the surrendered German submarine U-117.

The air forces designed to attack the U-117 consisted of eight divisions of naval flying boats and marine airplanes, twenty-two four-engine bombers (five machines), and six divisions of D-15 fighters (ten machines). If they had failed to achieve any result, the Army bombers were to try their hand. The pilots were allowed to attack the target in any manner of formation and at any level consistent with safety. For the purpose of the test the U-117 was anchored in bays 80 miles off the Virginia Capes. The U-boat, which was one of a number surrendered by Germany after the Armistice, was 287 ft. long and had a surface displacement of 1,064 tons.

The bombing test officially commenced at 9 a. m., when the first naval airplane division of three F-5-L flying boats, under Lieut. D. Thomas, U. S. N., took off from Hatteras Roads and headed for the position of the submarine. At 9:52 a. m.

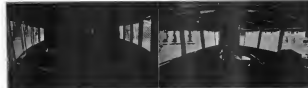
the division was sighted by the vessels of the Atlantic Fleet which were standing by around the U-117, and at 10:23 a. m. the three flying boats let go a first salvo of three 100-lb. Mark IV bombs from an altitude of 3,000 ft. No direct hit was registered, but the target was well bombarded. For one bomb fell close to the submarine on the port side while the other two bombs hit in succession. The explosion thereupon made a large circle and headed back upon the target. At 10:35 they let go a second salvo, of four bombs this time, and two of these second direct hits put aft of the mainmast tower. The remaining eight bombs hit in close proximity of the target. Six minutes later the U-117 sank by her bows.

The bombing test was witnessed from various ships by a large number of Army and Navy officers, members of Congress and newspapermen. Capt. W. A. Moffett, Director of Naval Aviation, observed the test in company of Captain H. C. Maston and Commander Kenneth Whiting and Engineer from the flying boat VC-3.

The next bombing tests of warships by aircraft will take place on June 23, when the radio-controlled battleship Iowa will be attacked by naval aircraft. The Iowa will be followed by the battleships of Cape Hatteras and Hatteras, from 50 to 100 miles off shore at 100 knots. The Army Air Service will have its first chance of bombing a warship in advance of the Naval Service on July 13, when Army planes will attack the surrendered German destroyer G-182.



TWO VIEWS OF THE ARMORED INFANT FIGHTING AIRPLANE BUILT BY THE DIVISION OF THE ENGINEERING DIVISION OF THE AIR SERVICE



TWO VIEWS OF THE COMFORTABLE PASSENGER CABIN OF THE DOUGLAS G.S.H. FLYING BOAT, DESIGNED BY OUR BUREAU OF JUNE 6, 1931

Airplane Notes

Greely, Colo.

The Greeley city council has agreed to level off nine blocks of unimproved land at the south end of the city for a landing field. The Greeley Chamber of Commerce voted to forward money for leveling the tract for one year, with an option to renew the lease.

The Midwest Airplane Co. will build a hangar on the property during the present month and has agreed to maintain planes there through the summer season. The airplane service to Cheyenne, Denver, Colorado Springs and Estes Park.

The county will make arrangements with the company to give emergency service for the sheriff and coroner's office when calls are received from distant parts of the county. Some sections are more than 50 miles remote from Greeley, and because of poor roads cannot be reached by auto within three hours' time.

Marshall, Mo.

Planes are being prepared for a reliable airplane landing field in Marshall, Mo., by Dr. L. G. Johnson and members of an airplane company which expects to start commercial business soon.

Dr. Johnson stated that the field would be made of such dimensions that it would accommodate any plane which would seek a landing here. The forest natured planes, in particular, are to be accommodated. The site of the field will be at the old race track grounds, where it is proposed to cut down the trees and make a runway of about 1250 feet, with a width of 150 feet.

Fort Sheridan, Ill.

Fort Sheridan is preparing a landing field on the small area largest island, to be ready within the next few weeks.

La Crosse, Wis.

Salmon Field, La Crosse, Wis., in service being used on a weekly basis has been a temporary station on this route because of the winter condition of Salmon Field during the season on the Chicago-Twin Cities aerial route. For several spring rains. The new field is now free enough to support all planes in shifting and taking off.

Fort Bayard, Va.

An emergency landing field is to be established on or near the government reservation at Fort Bayard, Va. The field is to be available for the purpose. Captain O'Brien, A. C., recently flew over the depot with a photographer to take views of the ground.

Lexington, Ky.

The Lexington Aviation Co. has been formed in Lexington, Ky. The new firm will maintain a school for pilots and students to engage in all forms of commercial aviation, such as passenger and merchandise carrying, aerial photography, etc. The officers of the company are: Harry B. Swann, president; Harry B. Swann, vice-president; Harold B. Wallace, treasurer; Col. J. M. Mace, secretary and advertising manager; James O. Crook, general manager and chief pilot.

Dallas, Tex.

The Matlow Aviation Co. has leased a landing field at the end of the city market, less than a mile from the heart of the city, Texas, where it expects to carry on various flying activities, including aerial interpretation, flying instruction, aerial photography, etc.

The field is in charge of Pilot Matlow, former Army pilot at Mitchell Field, and is under the supervision of the southern branch of the Curtiss Airplane & Motor Corp., which handles inspection.

Memphis, Pa.

The Monahan Aero Co., the only airplane company operating in the upper Monongahela Valley, has made arrangements for a new flying field on the Monahan farm, which is located near Lewis. Pilot Huns and Pilot David Huns are in charge of the flying.

WHERE TO FLY Passenger Carrying, Pilots' Training, Special Flights

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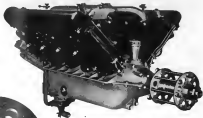
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- | | |
|----------------------------|--|
| 1. Lightest per horsepower | Greater useful load, increased performance. |
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| 4. Short overall length | Decreased non-manoeuvrability, compact installation. |
| 5. Incompressible parts | No long repair periods, economy, safety. |
| 6. Longevity | Many WRIGHT engines have flown over four years and are still flying. Many have flown 1,000 hours and over. With the 14 and 11-2 engines incorporating changes based on actual experience from hundreds of test runs, engines, an engine constructed to last to figure on ultimate life of 2,000 hours. |

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The reliable WRIGHT engines safeguard the life of the plane they carrying quality and low maintenance. Quick inspection and working vigilance makes these engines the most reliable in the world.

Compare the characteristics of these new engines now in production with any engine built—foreign or domestic.

	WRIGHT 11-2	WRIGHT 14-2
Power at 2,000 R.P.M.	115 H.P.	140 H.P.
" " 1,800 "	100 H.P.	125 H.P.
Weight, dry with hub	475 lbs.	540 lbs.
Gas per H.P. hour	47.5 cu. ft.	47.5 cu. ft.
Overall length, including hub and prop.	4' 3 1/2"	4' 3 1/2"

NOTE—The power given in the above table given, many individual engines give higher power and lower consumption.

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